AN OPERATIONS OFFICE PERSPECTIVE ON INTEGRATED SAFETY MANAGEMENT AND CHEMICAL SAFETY

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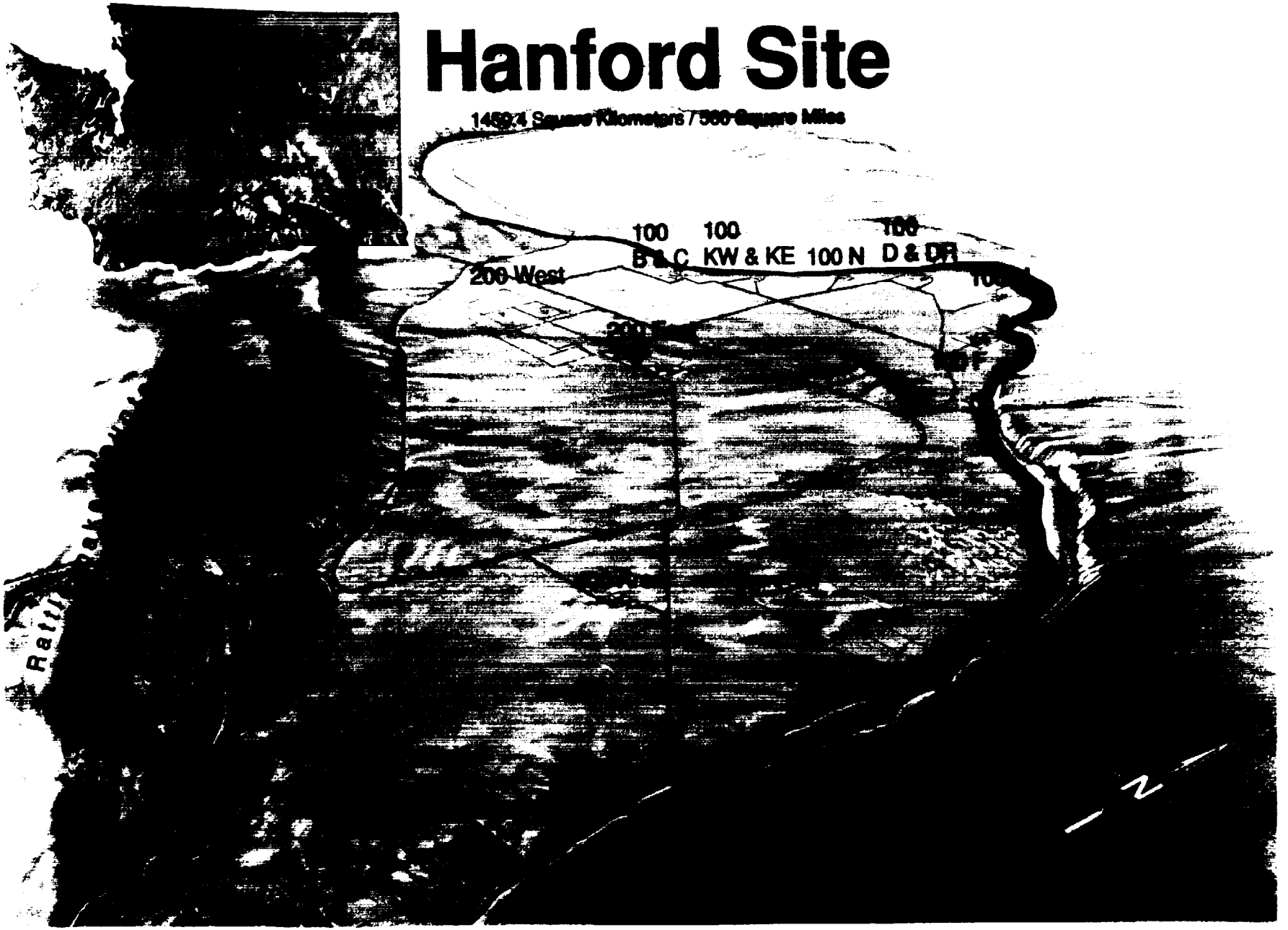
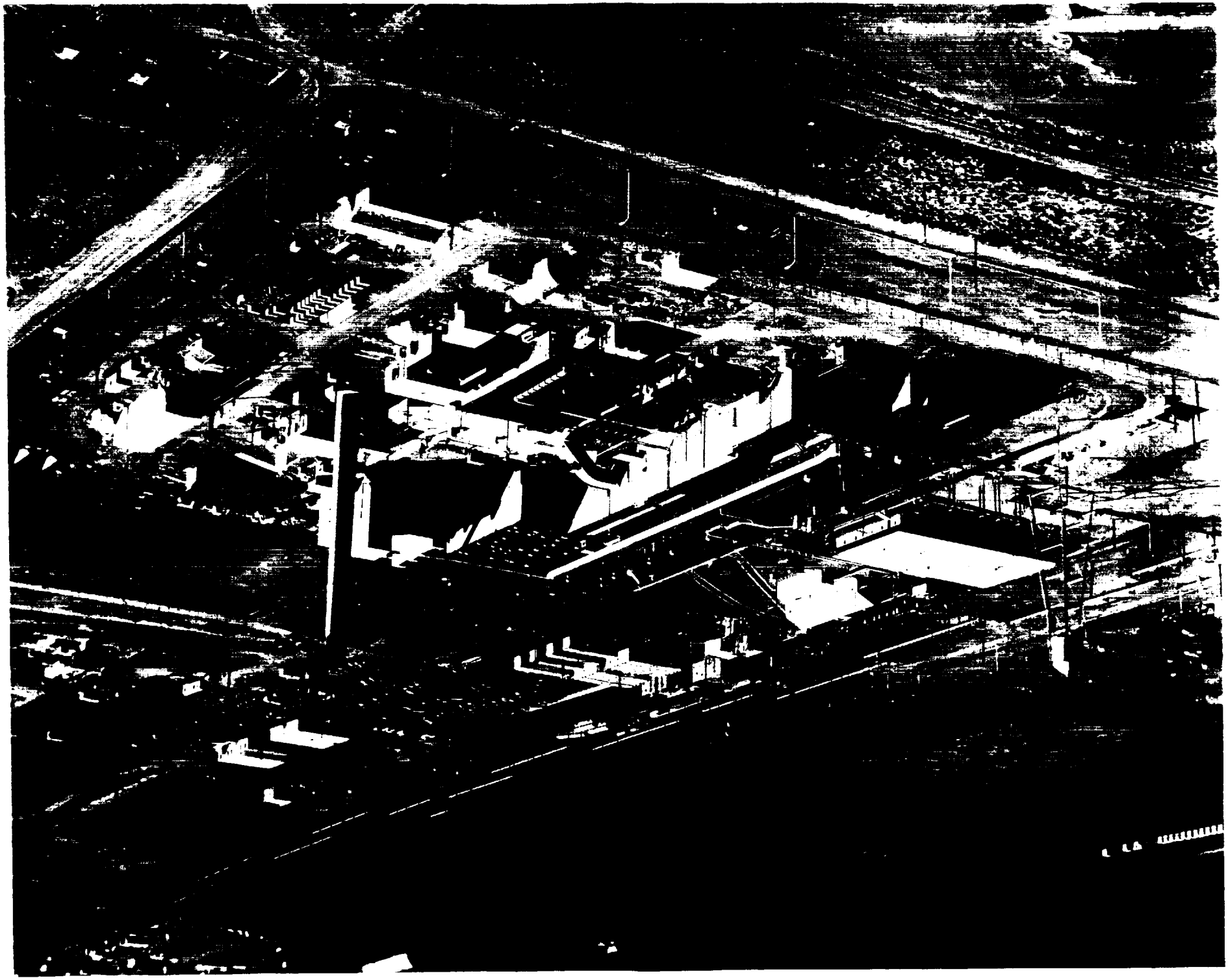
OUTLINE

- Background on Hanford, facility transition, and PFP
- Importance of chemical safety - recent explosion in PRF
- Insights gained from an operations perspective
- Integrated Safety Management System (ISMS)
- ISMS implementation - anticipated benefits
- Summary


Hanford Site
1450.4 Square Kilometers / 560 Square Miles
100
100
100
B & C
KW & KE
100 N
D & DR
200 West
200
Rattlesnake
N



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CHEMICAL EXPLOSION IN TANK A109

- Occurred at Hanford's Plutonium Reclamation Facility (PRF) on May 14, 1997. PRF is an inactive processing facility and part of the Plutonium Finishing Plant.
- The tank was in a room where nonradioactive bulk chemicals were once mixed to support plutonium recovery process operations.
- Direct cause -- overpressurization of tank due to autocatalytic chemical reaction in highly concentrated solution of hydroxylamine nitrate and nitric acid. The solution evaporated over a period of nearly four years.

EFFECTS OF THE EXPLOSION

- Structural damage - bulge, tears, and holes in roof; wall deformation; damage to doors.
- Damage to fire suppression system and release of 22,400 gallons of water, which flowed through facility; some escaped outside picking up radioactive contamination slightly above detectable limit.
- Plume of reaction gases from the exhaust stack.
- No injuries, but ten workers exposed to chemical plume outside the building.
- No evidence of airborne radiological release.

WHERE SAFETY MANAGEMENT FAILED

- Facility was allowed to slip into a standby mode (long-term chemical storage) without recognizing the spontaneous reaction hazard of a concentrated solution.
- Safety authorization basis with regard to analyzing hazards and setting safe operational boundary was inadequate.
- Procedure for transition to stand by, which would have required a safety evaluation, was not implemented. Standby planning did not include chemical makeup tanks.
- Relevance of precursors and similar events was not recognized.

INTEGRATED SAFETY MANAGEMENT SYSTEM
CONTEXT

- Follows a 1995 Defense Nuclear Facilities Safety Board (DNFSB) recommendation for the entire DOE complex.
- A single, integrated system for managing environmental, safety, and health hazards. Fundamental goal: "Do work safely and protect human health and the environment."
- Incorporates the best practices of several major initiatives, including ISO 14000, Voluntary Protection Program (OSHA), and Responsible Care (CMA).
- DOE Richland Operations and Hanford site contractors have begun a concentrated effort on deployment of ISMS.

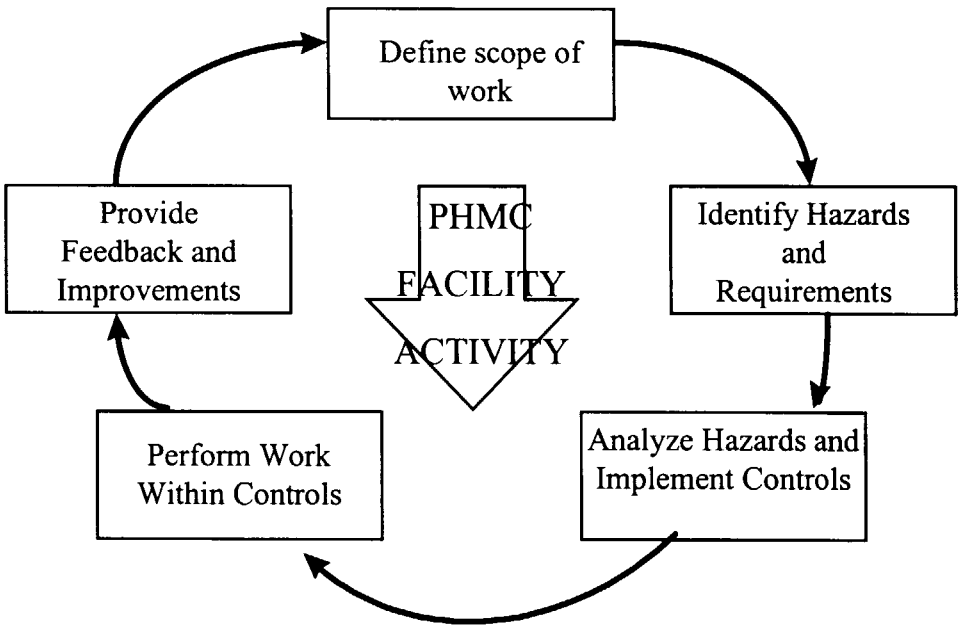
INTEGRATED SAFETY MANAGEMENT SYSTEM

Guiding Principles

- Establishment of ES&H policy by senior management
- Line management responsibility for performance
- Clear roles and responsibilities
- Competence commensurate with responsibilities
- Balanced priorities
- Identification of standards and requirements
- Hazard controls tailored to work being performed
- Operations authorization
- Communication and stakeholder involvement
- Checking and corrective action
- Management review

INTEGRATED SAFETY MANAGEMENT SYSTEM
CORE FUNCTIONS

ES& H Policy



Management Review

INTEGRATED SAFETY MANAGEMENT SYSTEM
ANTICIPATED BENEFITS

- A single system with defined flow down of requirements.
- Early worker involvement in the work planning process.
- Improved efficiency in identifying and analyzing work place hazards.
- Measurable performance expectations.
- Continuous improvement in applying ES&H practices.
- Senior management commitment to establish, sustain, and improve the ISMS.

SUMMARY

- Chemical safety has been a critical aspect of overall safety within the defense nuclear complex; the recent explosion at PFP is a reminder.
- Lessons learned from the accident will be factored into ISMS development and implementation.
- It is clear that increasing exchange of relevant technical information and operating experience between the DOE and CMA affiliated organizations will benefit worker and public safety.